

IB Diploma

CHEMISTRY

SL

Paper 1

2017 — 2024

Chapter 1	Stoichiometric Relationship	Page 1
Chapter 2	Atomic Structure	Page 28
Chapter 3	Periodicity	Page 44
Chapter 4	Chemical Bonding & Structure	Page 53
Chapter 5	Energetics / Thermochemistry	Page 77
Chapter 6	Chemical Kinetics	Page 105
Chapter 7	Equilibrium	Page 124
Chapter 8	Acids & Bases	Page 134
Chapter 9	Redox Processes	Page 146
Chapter 10	Organic Chemistry	Page 165
Chapter 11	Measurement & Data Processing	Page 193
	Answers	Page 213

1 - (CHEMI/11_SL_Summer_2017_Q1) - *Stoichiometric Relationship*

Which compound has the greatest percentage by mass of nitrogen atoms?

- A. N_2H_4
- B. NH_3
- C. N_2O_4
- D. NaNO_3

2 - (CHEMI/11_SL_Summer_2017_Q2) - *Stoichiometric Relationship*

Which statements about mixtures are correct?

- I. The components may be elements or compounds.
- II. All components must be in the same phase.
- III. The components retain their individual properties.

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

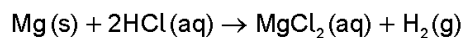
3 - (CHEMI/11_SL_Summer_2017_Q3) - *Stoichiometric Relationship*

5.0 cm^3 of 2.00 mol dm^{-3} sodium carbonate solution, $\text{Na}_2\text{CO}_3(\text{aq})$, was added to a volumetric flask and the volume was made up to 500 cm^3 with water. What is the concentration, in mol dm^{-3} , of the solution?

- A. 0.0050
- B. 0.0040
- C. 0.020
- D. 0.010

4 - (CHEMI/11_SL_Summer_2017_Q4) - *Stoichiometric Relationship*

What is the expression for the volume of hydrogen gas, in dm^3 , produced at STP when 0.30 g of magnesium reacts with excess hydrochloric acid solution?



Molar volume of an ideal gas at STP = $22.7 \text{ dm}^3 \text{ mol}^{-1}$

- A. $\frac{0.30 \times 2 \times 22.7}{24.31}$
- B. $\frac{0.30 \times 22.7}{24.31}$
- C. $\frac{0.30 \times 24.31}{22.7}$
- D. $\frac{0.30 \times 22.7}{24.31 \times 2}$

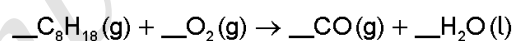
5 - (CHEMI/11_SL_Summer_2017_Q29) - *Stoichiometric Relationship*

What is the density, in g cm^{-3} , of a 34.79 g sample with a volume of 12.5 cm^3 ?

- A. 0.359
- B. 0.36
- C. 2.783
- D. 2.78

6 - (CHEMI/12_SL_Summer_2017_Q1) - *Stoichiometric Relationship*

What is the sum of the coefficients when the equation is balanced with whole numbers?



- A. 26.5
- B. 30
- C. 53
- D. 61

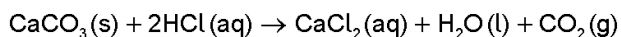
7 - (CHEMI/12_SL_Summer_2017_Q2) - *Stoichiometric Relationship*

How many moles of oxygen atoms are there in 0.500 mol of hydrated iron(II) ammonium sulfate, $(\text{NH}_4)_2\text{Fe}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}(\text{s})$?

- A. 4.00
- B. 7.00
- C. 8.00
- D. 14.00

8 - (CHEMI/12_SL_Summer_2017_Q3) - *Stoichiometric Relationship*

What is the maximum volume, in dm^3 , of $\text{CO}_2(\text{g})$ produced when 1.00 g of $\text{CaCO}_3(\text{s})$ reacts with 20.0 cm^3 of $2.00 \text{ mol dm}^{-3} \text{ HCl}(\text{aq})$?



Molar volume of gas = $22.7 \text{ dm}^3 \text{ mol}^{-1}$; $M_r(\text{CaCO}_3) = 100.00$

- A. $\frac{1}{2} \times \frac{20.0 \times 2.00}{1000} \times 22.7$
- B. $\frac{20.0 \times 2.00}{1000} \times 22.7$
- C. $\frac{1.00}{100.00} \times 22.7$
- D. $\frac{1.00}{100.00} \times 2 \times 22.7$

9 - (CHEMI/12_SL_Summer_2017_Q4) - *Stoichiometric Relationship*

Which factors affect the molar volume of an ideal gas?

- I. Pressure
 - II. Temperature
 - III. Empirical formula
- A. I and II only
 - B. I and III only
 - C. II and III only
 - D. I, II and III

ANSWERS

www.exam-integrate.com

1 - (CHEMI/11_SL_Summer_2017_Q1) - *Stoichiometric Relationship*

A

2 - (CHEMI/11_SL_Summer_2017_Q2) - *Stoichiometric Relationship*

B

3 - (CHEMI/11_SL_Summer_2017_Q3) - *Stoichiometric Relationship*

C

4 - (CHEMI/11_SL_Summer_2017_Q4) - *Stoichiometric Relationship*

B

5 - (CHEMI/11_SL_Summer_2017_Q29) - *Stoichiometric Relationship*

D

6 - (CHEMI/12_SL_Summer_2017_Q1) - *Stoichiometric Relationship*

C

7 - (CHEMI/12_SL_Summer_2017_Q2) - *Stoichiometric Relationship*

B

8 - (CHEMI/12_SL_Summer_2017_Q3) - *Stoichiometric Relationship*

C

9 - (CHEMI/12_SL_Summer_2017_Q4) - *Stoichiometric Relationship*

A

10 - (CHEMI/10_SL_Winter_2017_Q1) - *Stoichiometric Relationship*

D